Assessment and repair of distressed kiln piers in a cement manufacturing plant

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Abstract: The observation of apparent structural distress in the form of well-formed diagonal cracks in a number of kiln supporting piers in a cement manufacturing plant led to a detailed investigation to diagnose the problem facing the piers and to propose remedial measures to enhance the safety of the piers. The strength assessment of the as-built piers included necessary field inspection and review of the forces acting on the piers. The strength criteria accommodated the adverse effect of possible constructional discrepancies and the operational loads. The study reveals that the piers are subjected to excessive torsional moment arising from a possible scenario of partial loss of contact of the tyre with one roller, and consequently the piers were required to be strengthened by providing additional wall thickness. The proposed strengthening scheme involves jacketing a new concrete wall of 250 mm thickness around the pier. The jacket was connected to the existing wall and foundation by closely spaced epoxy-grouted dowels and was cast by shotcreting using dry mix of Portland cement and aggregates.